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HOUSING FOR A CASSETTE

This invention relates to a housing adapted to receive a cassette for a queue management or customer guidance system.

It is now well-known to provide queue management or customer guidance systems in banks, retail outlets, airports, hotels, sports centres, arenas and similar locations. Such management systems comprise a plurality of vertical posts with heavy bases or pedestals which support either lengths of retractable webbing barriers, simple rigid rails or ropes.

One such management system comprises a cassette which is located in the upper end of each post. This cassette accommodates at least two metres of heavy duty webbing which can be withdrawn from the cassette against the bias of a spring, there being an end fitting on the free end of the webbing designed for engagement with a mating fitting on an adjacent post. When several lengths of such webbing are stretched between adjacent pairs of posts, a customer guidance or queue management system is provided and the barriers, depending on their orientation, can be used to guide or manage people in a queue by directing them in a required direction. Such a system is marketed under the TENSABARRIER® trade mark.

While such queue management systems have been satisfactory, several disadvantages with the present systems have been highlighted.

When constructing a queue management system, it is often considered desirable to combine different barrier means, such as rigid rails, ropes and retractable webbing, in the same barrier system. However, while queue management systems are provided which support any one type of barrier means, no systems are presently available which combine two or more barrier means in the same system.

In the TENSABARRIER® retractable webbing queue management system, the cassettes are located in the upper end of the support posts. Four mating means are attached to the cassette – three 'male' mating fittings attached to the cassette cage and

one 'female' mating fitting which is attached to the end of the retractable webbing. When in use, these mating fittings are circumferencially spaced 90° apart in a horizontal plane outside the cassette and are located outside the post diameter, the post being only just larger than the cassette within. Thus, in order to accommodate the cassette, four slots are located in the upper end of the post such that the mating fittings protrude through the slots while the remainder of the cassette is concealed within the post. It has subsequently been discovered, however, that slotting the tube to accommodate the cassette weakens the tube and that, when a post is knocked over, the impact can cause sufficient distortion to disable the mechanism within.

One known cassette comprises a central rotatable spindle and a length of webbing wound around the spindle, the webbing having an internal end thereof attached to said spindle and a spring biasing said spindle for rotation in a direction which will resist, in use, unwinding of the webbing from the spindle when tension is applied to the outer end of the webbing. As used herein, such a cassette is referred to as "a cassette of the type described".

It has been discovered that after repetitive use the spring described above tends to lose its elasticity. This loss of elasticity can lead to the reaction force provided by the spring to become non-linear and, in particular, insufficient to retract fully the webbing. This is, of course, undesirable since it is visibly unattractive and can lead to damage to the mating fitting attached to the webbing.

Forthcoming legislation making a lower second barrier compulsory for barrier products in certain circumstances has prompted development of posts which allow a cassette to be positioned half way down the post as well as at the top. A cassette for use in a queue management system and for insertion within a post of such a system at a location spaced from an upper end thereof is disclosed in United Kingdom patent application GB 9903901.8. The post of this system requires an aperture to be formed in the post such that, once the cassette has been inserted within the post, the webbing may be passed through the aperture and the mating fitting attached.

However, there are several drawbacks associated with the post disclosed in GB 9903901.8. First, the formation of the aperture in the post is costly and leads to the

weakening of the post. Also, the way in which the cassette is housed within the post makes it difficult to access the cassette mechanism, should repair be required. Furthermore, while the cassette mechanism located within the post shares certain components with the cassette used in the upper end of the post, a large proportion of the parts used are not complementary between the two cassettes. This, of course, leads to an increased cost for production of the final product.

The present invention seeks to solve the problems associated with existing queue managing systems.

It is therefore a first object of the present invention to provide a housing for a cassette for an integrated queue management system which utilises standardised parts in order to allow a flexibility of queue management design which is presently unobtainable.

It is a second object of the present invention to provide a housing with attachment means for rigidly attaching the housing to a post.

It is a further object of the present invention to provide a housing with means for adjusting the elasticity of the constant force spring within a cassette located within said housing, in order that the spring provides sufficient retention force to stow fully the webbing wound on the cassette, even after extended use.

It is a fourth object of the present invention to provide a housing having means for attaching accessories, such as signs and leaflet holders and the like, to the housing.

According to a first aspect of the present invention, there is provided a housing for a cassette of the type described for a queue management system comprising:

(i) a first portion and a second portion, which, when combined together in use, are adapted internally to receive a cassette, and;

(ii) four connecting locations around the periphery of said combined portions each adapted to receive a complementary barrier member or to be attachable to a complementary wall fitting, said connecting locations being spaced

circumferentially at substantially 90°, and, in use, being disposed in a horizontal plane.

As used herein a 'barrier member' refers to webbing, rail, rope or like means suspended between two adjacent locations for preventing free passage between the two locations.

In a preferred arrangement, the housing is formed of two half portions.

In a first construction of the present invention, at least one of said portions is a joiner portion for making a joint with a vertically disposed post.

In a second construction, both of said portions are joiner portions.

In a third construction of the present invention, at least one of said portions is a terminal portion. Optionally, both of said portions are terminal portions.

Preferably, the connecting locations are grooves formed within the body of the combined portions, which, in use are vertically disposed.

Optionally, the cassette forms part of the housing.

Two posts supporting housings thereon may be used to receive perch seats.

Preferably, the housing of the present invention comprises only two substantially equal sized half portions. As will be appreciated, each of these portions can be independently chosen from a joiner half portion or a terminal half portion. Thus, three combinations of the half portions can be envisaged: two terminal half portions, two socket half portions and a first terminal half portion and a second joiner half portion.

It can thus be seen that, in combination with suitably selected posts and bases, the present invention provides means to allow cassettes to be positioned in at least the three following arrangements:

(i) on the upper end of a post by use of a lower joiner half portion and an upper half terminal portion;

(ii) between the upper end of a first post part and the bottom end of a second post part by use of a lower joiner half portion and an upper socket half portion, and;

(iii) on a wall mounted fitting by use of an upper terminal half portion and a lower terminal half portion.

As will be appreciated, the housing of the present invention alleviates several of the problems associated with the prior art. In particular, the selection and combination of suitable half portions allows standard cassettes to be positioned in any of the three positions indicated above. Furthermore, in contrast to the prior art, the present invention does not require slotting of the post, leading to a more durable post arrangement.

It is particularly advantageous that the connecting locations are 'female' grooves formed within the body of the combined portions. In particular, the grooves allow the connecting locations of the barrier members to be recessed into the body of the housing. Thus, improved resistance to damage to the connecting locations is observed if the posts to which the housings are attached are knocked over.

It is important, when the housing of the present invention is disposed between a first post part and a second post part in order to construct a dual line barrier, that the post and housing arrangement is rigid.

Accordingly, it is preferred that, said joiner portion further comprises attachment means for rigidly connecting said joiner portion to the post. Preferably, therefore, the joiner portion incorporates a projecting spigot which locates within the post. Preferably, the spigot is formed of at least two resiliently deformable parts designed for mating engagement within the post.

The attachment means may further comprise:

(i) a screw fixing comprising a head for turning said screw fixing, a threaded portion adjacent to said head and an unthreaded portion at the end distal from said head;

(ii) said two spigot parts, which, in use, extend vertically from the joiner portion and are sized to slot within the internal diameter of the post, one of said spigot parts incorporating a substantially horizontal threaded hole for receiving the threaded portion of said screw fixing and comprising a horizontally disposed first peg for insertion into a hole in said post, said threaded hole being accessible through said first peg, and the other of said spigot parts incorporating an internal recess for receiving the unthreaded portion of said screw fixing and comprising a horizontally disposed second peg for insertion into another hole in said post, said recess and said peg being in the same horizontal plane as said threaded hole in said spigot part.

Preferably, said spigot parts are supported internally by a frusto-conical support depending from said joiner portion.

According to a third aspect of the present invention, the housing further comprises winding means for increasing the torque provided by the spring of said cassette. If the housing comprises at least one terminal portion, then it is preferred that a recess is formed in a terminal end face which is closed off by an end cap. Preferably, the winding means is accessed via said recess.

Preferably, said winding means comprises an aperture providing access to a spindle of a cassette within the housing, there being means on an end of the spindle which is accessed via the aperture to enable the tension of a spring associated with the spindle and for retracting webbing wound round the spindle to be adjusted. Preferably ratchet means is also provided to maintain the adjusted tension of the spring.

The recess is preferably cylindrical and usable for the attachment of accessories, such as signage, to said terminal portion.

The housing is preferably formed by two half portions which are joined by suitable means along a central diametrical plane, and which are shaped externally to provide a generally smooth egg-like shape; when one or both of the half portion comprise joiner portions, the egg shape is modified at its terminal end to provide a spigot, the periphery of which merges smoothly with the egg shape, and the external diameter of which is stepped so that the spigot will fit within an end of a post, and sized so that preferably the outer surface of the egg shape will merge smoothly with the outer wall of the post, so as to give the appearance of slightly enlarged, structural extension of the post.

Several embodiments of a housing for a cassette according to present invention are now described by way of example with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a first construction of the present invention showing two terminal half portions combined together,

Figure 2 is a perspective view of a second construction of the present invention showing an upper terminal half portion and a lower joined half portion combined together,

Figure 3 is a perspective view of a third construction of the present invention showing two joiner half portions combined together,

Figure 4 is a side view of the first construction of figure 1 attached to a wall mounted fitting,

Figure 5 is a side view of the second construction of figure 2 attached to a post and base,

Figure 6 is a side view of the third construction of figure 3 and the second construction of figure 2 attached to a post,

Figure 7 is a vertical section through an exemplary embodiment of the second construction of the present invention,

Figure 8 is a perspective view showing a leaflet accessory attached to the arrangement of figure 2,

Figure 9 is a perspective view of a signage accessory attached to the arrangement of figure 2,

Figure 10 is a perspective view illustrating schematically how two perch seats might be supported.

Referring first to figure 1, a first construction of housing for a cassette for wall-mounting is shown generally at 1, the housing having an upper terminal portion 4a and a lower terminal portion 4b, which are combined together in the vicinity of a common diametral plane P. As can be seen, the upper terminal portion 4a further includes an end cap 8. The housing further includes four female connecting locations 7a – d two of which are hidden, the connecting locations extending at right angles to plane P and being equally spaced at 90° from each other around the major circumference of the housing. The connecting locations are in the form of re-entrant grooves. As shown in figure 4, the housing may be attached to a wall through the connecting locations via a male fitting 9.

Figure 2 shows a second construction of housing 2 for a cassette for locating at the upper end of a post. The housing comprises an upper terminal portion 4a and a lower joiner portion 5b, the lower end of which terminates in a projecting spigot 6, while the upper terminal portion has an end cap 8. Connecting locations are shown as 7a and 7b. As shown in figure 5, the housing 2 will generally be attached to a post 10 having a base 11.

Figure 3 shows a housing 3 for a cassette for locating between the ends of two post parts and for use in a two line queue management system, as shown in figure 6. The housing comprises an upper joiner portion 5a and a lower joiner section 5b. Both joiner sections further include spigots 6. Connecting locations are shown as 7a and 7b. As shown in figure 6, the housing 3, is used between two post parts, 10a and 10b, to provide a lower cassette of a dual line queue management system, in conjunction with a housing 2 at the top of the post arrangement for a cassette of the upper line of the system.

Referring to figure 7, the housing 2 of figure 2 is shown to a larger scale than in figure 2. The outer terminal portion 4a and the lower joiner portion 5b are shown held together at a diametral joint plane 71 by a sleeve 70a having enlarged end portions 70b. A cylindrical recess 20 is provided in the opposite terminal end of the upper

terminal portion and the recess is normally closed or covered by an end cap 8. The housing 2 is designed to accommodate a cassette 50 for a length of webbing. The webbing is wound around and stored upon a central spindle 53 of the cassette, the webbing being shown schematically at 54. An outer end of the webbing (not shown) is passed through the wall of the housing 2 through a slot (not shown) in the base of one of the connecting locations 7a or 7b and has an end fitting thereon designed to mate with a connecting location 7a or 7b of another housing 1, 2 or 3 by being slid into one end of the re-entrant groove providing the connecting location. The webbing is withdrawn from the cassette by pulling on the end of the end fitting, thus causing the spindle 53 to rotate against the bias of a constant tension spring 55 such as a TENSATOR® spring. The spring 55 has one end connected to an extension 53a of the spindle 53 and its opposite end connected to the interior of this terminal portion 4a of the housing or alternatively to part of an outer casing (not shown) of the cassette 50. An upper end of the extension 53a extends upwardly through a central aperture in the base of the recess 20 and is slotted as shown at 21. This arrangement is combined with a ratchetting device (not shown) or the like so that by rotating the extension 53a relative to the spindle 53, the tension of the spring 55 can be altered.

At its lower end, the cassette incorporates a centrifugal brake mechanism of generally known construction which is shown at 56. This prevents the spring 55 from causing the webbing 54 to be wound back into the cassette 50 too fast when the end of the webbing is released after the webbing has been fully withdrawn from the cassette.

The joiner portion 5b of the housing has an upper end part in which the sleeve 70a is located which is a mirror image of the equivalent part of the terminal portion 4a but, instead of having a generally arcuate somewhat egg-like terminal end portion as in the terminal portion 4a, has a lower end part which terminates in a generally cylindrical spigot 22. This spigot 22 is split into at least two portions by a diametral line (not shown) and is supported internally by a frusto-conical internal support cone 25a, an upper end of which has an upstanding cylindrical wall 25b, the inner circumference of which provides a bearing for a lower end of the webbing spindle 53. This lower end extends outwardly through a bottom wall 52 of the cassette 50 which may be provided with a depending circular flange which locates upon the upstanding cylindrical wall 25b.

The diametrally split spigot 22 is designed to form a snug fit within the upper end of a tubular post 24 and is provided with a pair of radially projecting pegs 28a, 28b designed to form a snap fit within diametrically opposed circular apertures 29a and 29b in the upper end of the post 24. At its bottom end, immediately below where the support case 25a is joined to the cylindrical spigot 22, the interior wall of the spigot is formed with two diametrically opposed recesses which are lined respectively, with an internally threaded tubular liner 26 and a blind bottomed liner 27. The recess for the tubular liner 26 extends outwardly through the wall of the spigot 22 centrally of the peg 28b and the recess for the liner 27 is aligned with the peg 28a, and theses liners 26 and 27 are engaged by a screw fixing member 40 which has a distal end and a screw fixing member 40 which has a distal end designed to fit within the blind ended liner 27 and a proximal end portion provided with a screw thread 42 designed threadedly to engage with the internal thread of the liner 26. The proximal end face of the screw fixing 40 has a slotted head 41 to enable it to be turned with a screw driver. As will be apparent from viewing figure 7, when the screw fixing 40 is rotated about its longitudinal axis in one direction, this will tend to move apart the two diametrally split portions of the spigot 22, thus forcing the two pegs 28a and 28b into the apertures 29a and 29b in the wall of the tube 24. This has the effect of locking the housing 2 within the upper end of the post 24.

A circumferential recess is preferably provided in the outer periphery of the spigot 22, immediately above the spigot 22, to accommodate an annular trim ring 80 which is stepped at 81 so as to fit within the upper end of the post 24.

When the end cap 8 is removed to reveal cylindrical recess 20, accessories, such as leaflet holders 50 and signage 51 maybe inserted into the cylindrical recess 20, as shown in figure 8 and 9.

It will, of course, be appreciated that the present invention has been described above purely by way of example, and modifications in detail can be made within the scope of the invention.

In particular, the trim ring 80 may be adapted to carry a logo or advertising on the ring. This is particularly advantageous since it allows the housing to be customised for particular end users, thus improving the perceived image of the product.

Figures 4 – 6 show how the three housings 1 –3 are used. It will appreciated that the construction of the posts and their bases can be each styled, shaped and adapted to the needs of each end user.

Furthermore, two posts fitted with housings 2 may be provided with a perch seat 60, to be attached to the connecting locations of the housing, as suggested in figure 10.

A principle advantage of the housings of the present invention is their adaptability. Because of the nature of their connecting locations 7a, 7b, it is possible to provide a queue management system formed from a combination of lengths of webbing withdrawn from the housing, and rigid barrier beams provided with end fittings which slot into the connecting locations 7a, 7b or even formed from a plurality of posts fittings with housings 1, 2 or 3 and interconnected just by rigid barrier beams. These can also be combined with the arrangement shown in figure 8, 9 and 10.

Claims

1. A housing for a cassette of the type described for a queue management system comprising:

(i) a first portion and a second portion, which, when combined together in use, are adapted internally to receive a cassette, and;

(ii) four connecting locations around the periphery of said combined portions each adapted to receive a complementary barrier member or to be attachable to a complementary wall fitting, said connecting locations being spaced circumferentially at substantially 90°, and, in use, being disposed in a horizontal plane.

2. The housing as claimed in claim 1, wherein the housing is formed of two half portions.

3. The housing as claimed in claim 1 or 2, wherein at least one of said portions is a joiner portion for making a joint with a vertically disposed post.

4. The housing as claimed in any one of claims 1 – 3, wherein both of said portions are joiner portions.

5. The housing as claimed in claim 1 or 2, wherein at least one of said portions is a terminal portion.

6. The housing as claimed in any one of claims 1, 2 or 5, wherein both of said portions are terminal portions.

7. The housing as claimed in any one of claims 1 – 6, wherein said connecting locations are grooves formed within the body of the combined portions, which, in use are vertically disposed.

8. The housing as claimed in any one of claims 1 – 7, wherein said cassette forms part of said housing.

9. The housing as claimed in any one of claims 1 – 8, wherein two posts supporting said housings thereon may be used to receive perch seats.

10. The housing as claimed in claim 3 or 4 or any one of claims 5 – 9 when dependent on claim 3 or 4, wherein said joiner portion further comprises attachment means for rigidly connecting said joiner portion to the post.

11. The housing as claimed in claim 10, wherein said joiner portion incorporates a projecting spigot which locates within the post.

12. The housing as claimed in claim 11, wherein said spigot is formed of at least two resiliently deformable parts designed for mating engagement within the post.

13. The housing as claimed in any one of claims 10 – 12, wherein said attachment means further comprises:

(i) a screw fixing comprising a head for turning said screw fixing, a threaded portion adjacent to said head and an unthreaded portion at the end distal from said head;

(ii) said two spigot parts, which, in use, extend vertically from the joiner portion and are sized to slot within the internal diameter of the post, one of said spigot parts incorporating a substantially horizontal threaded hole for receiving the threaded portion of said screw fixing and comprising a horizontally disposed first peg for insertion into a hole in said post, said threaded hole being accessible through said first peg, and the other of said spigot parts incorporating an internal recess for receiving the unthreaded portion of said screw fixing and comprising a horizontally disposed second peg for insertion into another hole in said post, said recess and said peg being in the same horizontal plane as said threaded hole in said spigot part.

14. The housing as claimed in claim 13, wherein said spigot parts are supported internally by a frusto-conical support depending from said joiner portion.

15. The housing as claimed in any one of claims 1 to 14, wherein said housing further comprises winding means for increasing the torque provided by the spring of said cassette.

16. The housing as claimed in claim 15, wherein said terminal portion further comprises a recess formed in a terminal end face which is closed off by an end cap.

17. The housing as claimed in claim 16, wherein said winding means is accessed via said recess.

18. The housing as claimed in any one of claims 14 – 17, wherein said winding means comprises an aperture providing access to a spindle of a cassette within the housing, there being means on an end of the spindle which is accessed via the aperture to enable the tension of a spring associated with the spindle and for retracting webbing wound round the spindle to be adjusted.

19. The housing as claimed in claim 18, wherein ratchet means is also provided to maintain the adjusted tension of the spring.

20. The housing as claimed in any one of claims 16 – 19, wherein said recess is cylindrical and usable for the attachment of accessories to said terminal portion.

21. A housing for a cassette of the type described, said housing being substantially as hereinbefore described with reference to the accompanying drawings.

22. A post for a queue management system, incorporating at least one housing as claimed in any one of claims 1 – 21.

23. A queue management system having a pluarity of posts as claimed in claim 22 and / or at least two housings as described with reference to figure 1 of the accompanying drawings.

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INVESTOR IN PEOPLE

Application No: GB 0008518.3 **Examiner:** Geoff Nicholls
Claims searched: All **Date of search:** 26 October 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): B8M (MB6 MB7)

Int Cl (Ed.7): E01F 13/02

Other: ONLINE: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
Y	GB 1587311	(BRITISH AIRPORTS AUTHORITY) Note portions 10, 20 forming housing which has connecting location 32	1, 5, 8
Y	US 5050846	(GOODMAN) Note four equally distributed peripheral connecting locations 32a, 32b, 32c and 32d.	1, 3, 5, 8, 10, 11
Y	US 4844420	(OSTER) Note housing portions 12, 14, 36 and connecting location 16	1, 3, 5, 8, 10, 11

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

FIG. 1

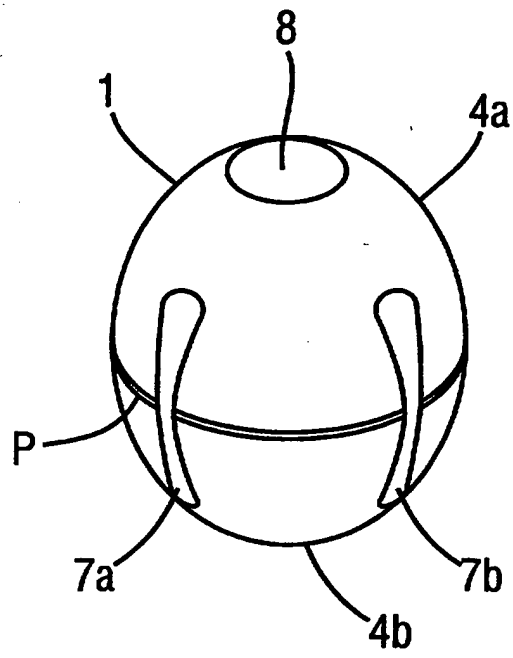


FIG. 2

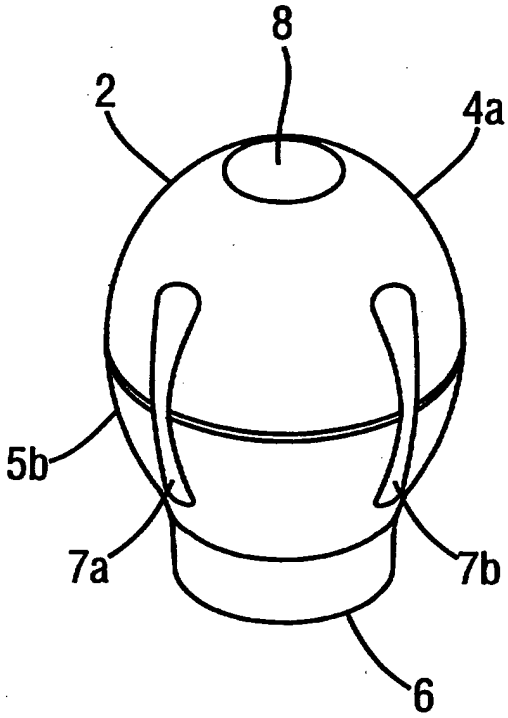


FIG. 3

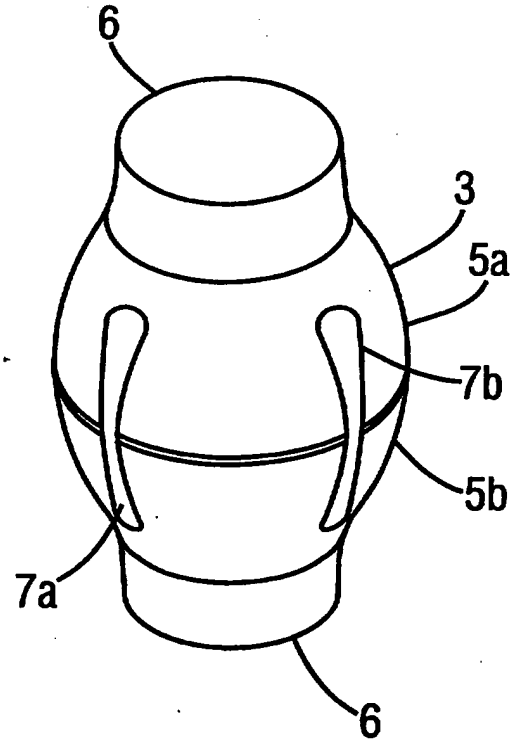


FIG. 4

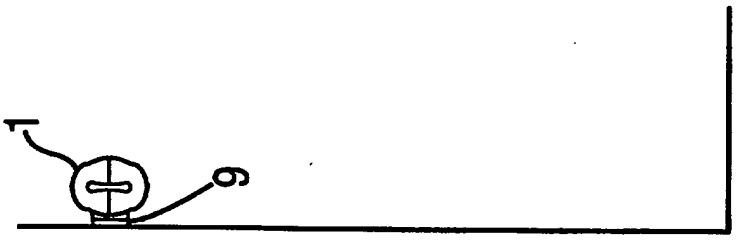


FIG. 5

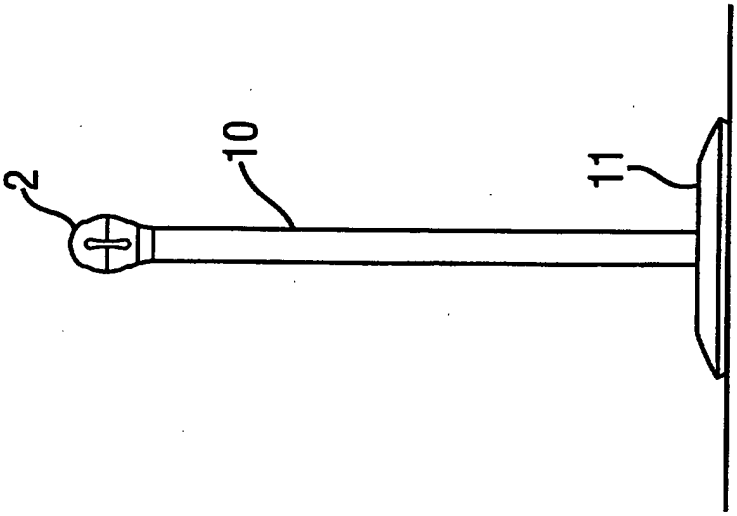


FIG. 6

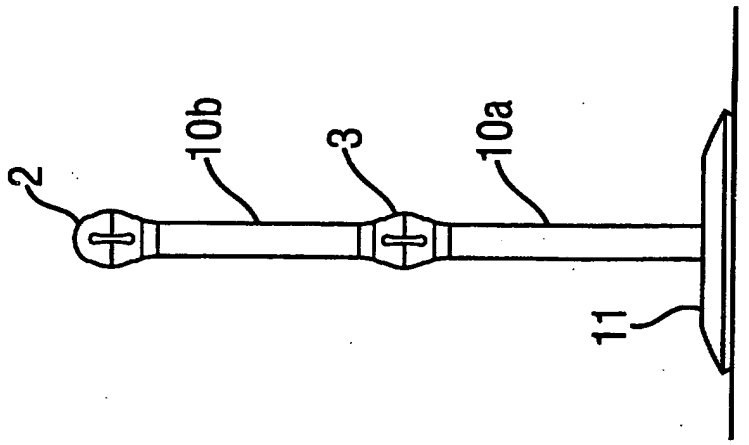


FIG. 7

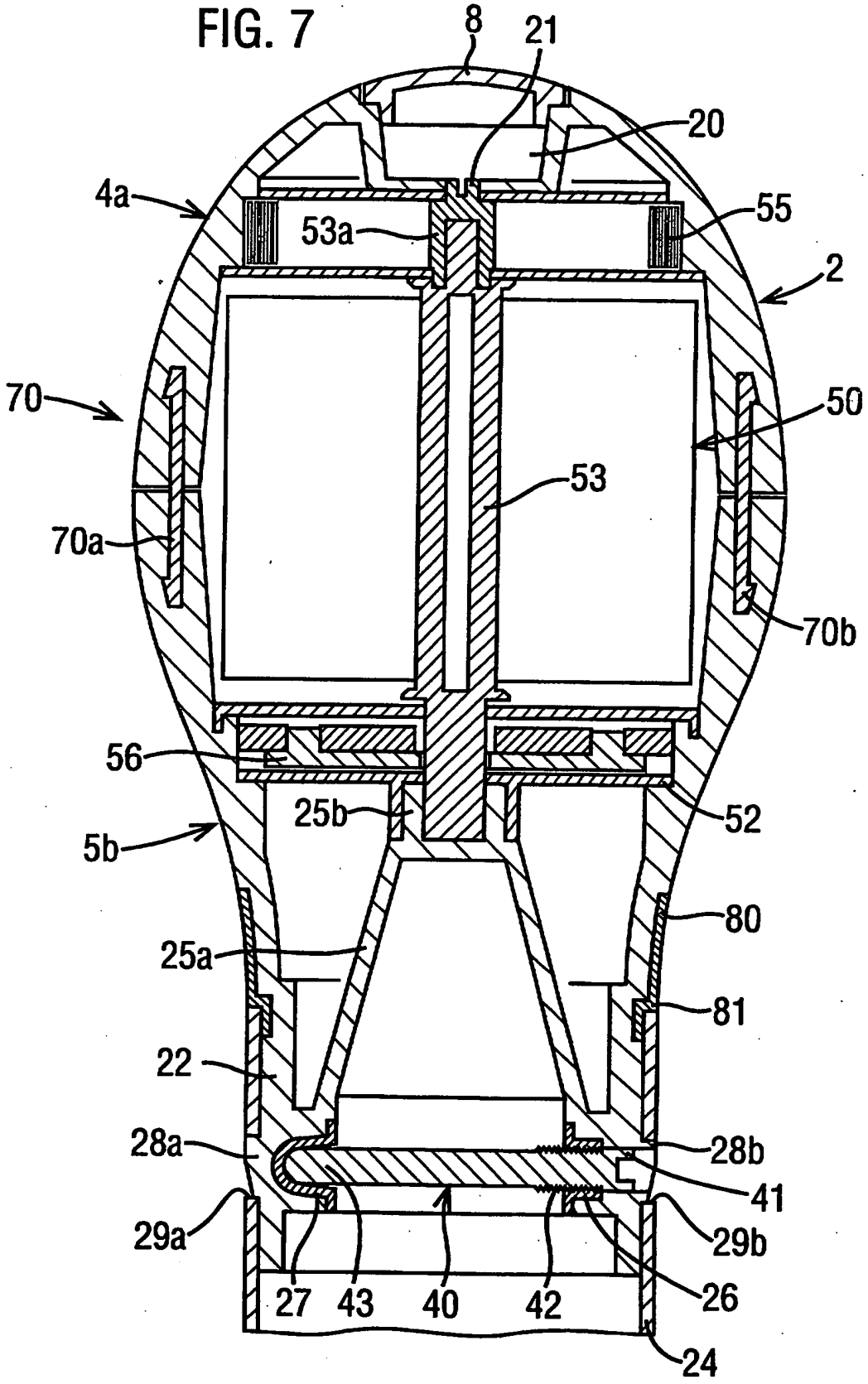

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FIG. 8

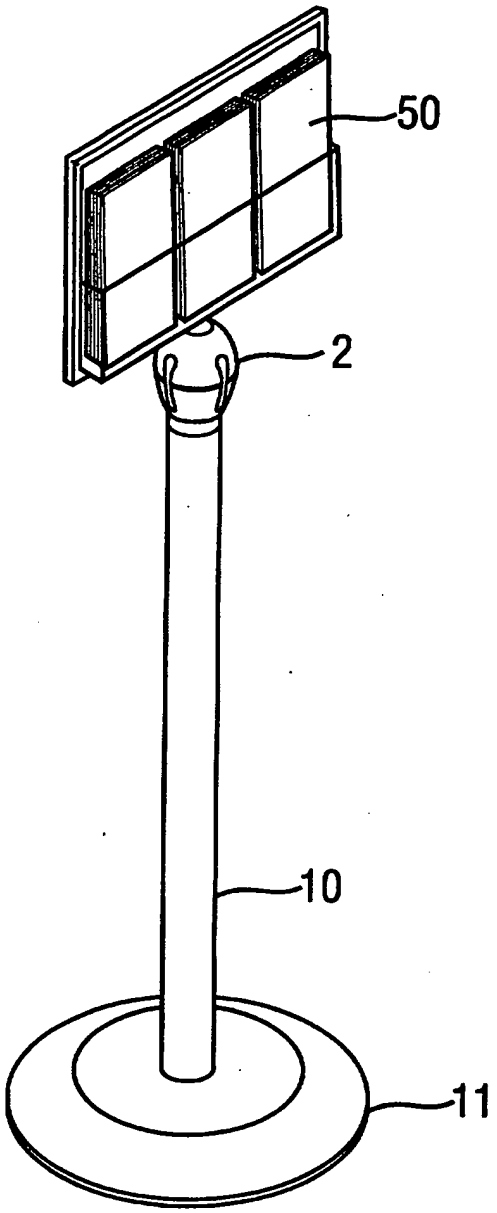


FIG. 9

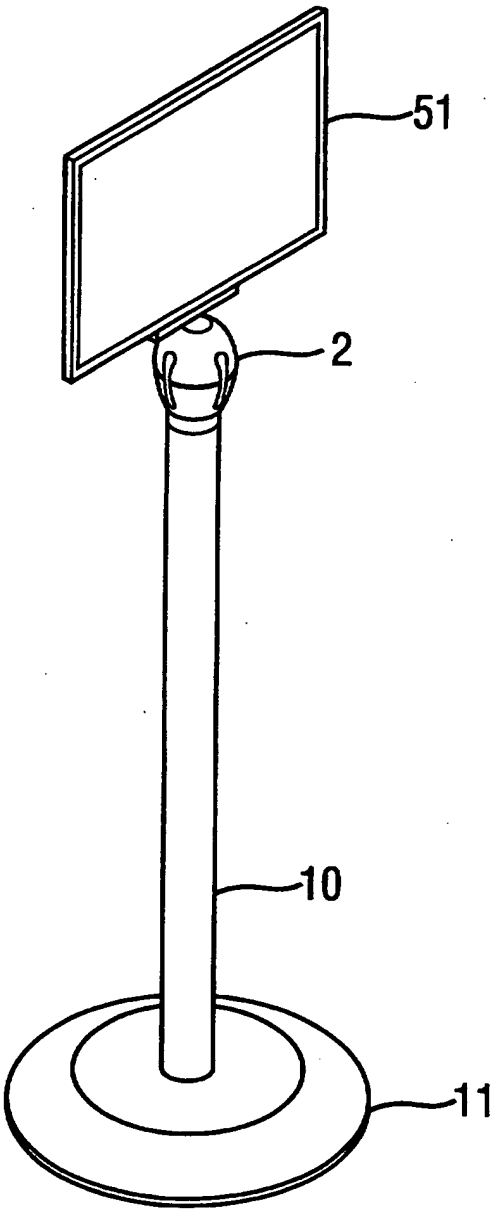


FIG. 10

